Rainwater Harvesting

Currently, in Utah, there is sufficient water to supply clean drinking water and water for other purposes to every resident in the state. However, as projections show by the year 2050, if the state continues to consume water as we currently do, the demand will exceed the supply. The Utah Division of Water Resources (DWRe) has several strategies to ensure this won't happen, with water conservation being one of the most important to meet future water demands. The Division is currently working with communities around the state to reduce overall consumption of water by at least 25% by 2050. With this goal, less water will need to be developed to meet future demands. One potential way homeowners can conserve water, is to collect rainwater. Rainwater Harvesting (RWH) can help maintain water supplies, reduce environmental damage by minimizing dam construction, and can help restore post-development runoff back to pre-development conditions. Currently in Utah, RWH is legal and can be done without filing for a water right. Senate Bill 32 specifies that a precipitation harvester or cistern can use an underground container no larger than 2,500 gallons. If the precipitation harvesting is performed above ground then the harvester or cistern can use no more than two storage containers that cannot exceed 100 gallons each. As mentioned before RWH systems do not require a valid water right however it is necessary to register RWH systems with the Utah Division of Water Rights. This can be done by clicking here.

A simple rainwater harvesting system uses a barrel to collect rainwater from the roof and is applied directly outside

A complex rainwater harvesting system uses an underground collection basin and utilizes pumps to use the water in an irrigation system

Now the question is, why should somebody harvest precipitation? Precipitation collection system provides water after the storm has happened. This means that less water needs to be diverted and piped to a given lot. RWH can also assist in reducing runoff that may cause erosion of canal and stream banks. In so doing this will improve water quality in these waterways. Storing precipitation and using the water later can increase infiltration that will promote healthier ground water aquifers. The collection of precipitation will also reduce storm water flows to water reclamation facilities. These are a few of the benefits, none greater than the conserving of potable water. Since the majority of Utahns irrigate their landscapes with potable water,

harvested rainwater will conserve the potable water for potable uses. However, it does not rain a sufficient amount in Utah to irrigate strictly with the growing season precipitation (on average, 6.5 inches of effective precipitation falls during the growing season along the Wasatch Front, while 30 inches are required to water a typical lawn). Therefore the precipitation that is used will decrease consumption of the normal established sources but will not eliminate the need to add supplemental irrigation to a typical Utah landscape.

The cost of water in Utah is relatively inexpensive, costing on average $2 per 1,000 gallon. Therefore in the implementation of a RWH system, costs need to be considered. The table shows the approximate difference in cost for an underground and above ground system. This estimate also includes data showing how long it takes to recuperate the cost of the system based on a water cost of $2 per 1,000 gallons. The example indicates that an above ground system, with a simple device to remove the water from the barrel, is the most economical way to harvest precipitation in Utah.

Installation Type	Underground	Above Ground
Storage Volume (gal)	2,500	100
System Cost ($)	8,000*	100 – 300**
Number of Fills to Pay for System	1,600	500 – 1,500
Number of Years to Pay for System	173	3 – 9

* System cost based on information in the Texas Manual on Rainwater Harvesting
** System cost based on average costs online

Many of the successful RWH systems around the country have been installed in different climate types than Utah's. When installing a water cistern outdoors it is important to consider the climate. If the cistern is required, by state law, to be buried underground, make sure that it is below the frost line. This depth is different for different areas of the state and local building inspectors should know what that depth is for you area. If your cistern is above ground, it is recommended that it be emptied prior to freezing temperatures occurring and maintained emptied until the threat of freezing has passed. Additional precautions should also be taken to ensure that the above ground cistern does not freeze and break during the winter months.

There are several guides to installing a successful RWH system on the internet:

The Texas Manual on Rainwater Harvesting (Texas Water Development Board, Texas)

Managing Wet Weather with Green Infrastructure (Collaborative effort of several agencies)

Virginia Rainwater Harvesting Manual (The Cabell Brand Center, Virginia)